UNIVERSITY OF SASKATCHEWAN
College of Agriculture and Bioresources
DEPARTMENT OF PLANT SCIENCES
AGBIO.USASK.CA

Fungicide Strategies to Manage Pasmo Disease of Flax

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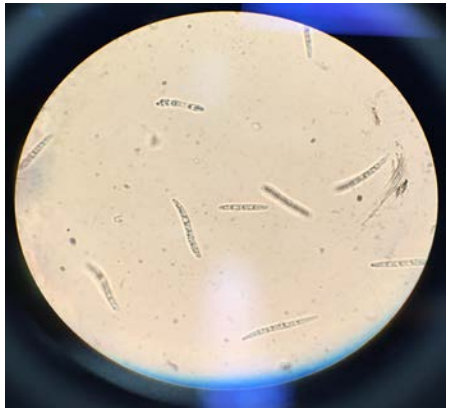
Pasmo disease of flax

- Caused by *Septoria linicola* (Speg.) Garassini
- First identified in Argentina in 1909
- Warm and humid environment favors disease development (20-21°C)



Spores of *S. linicola*

Pasmo infected flax field

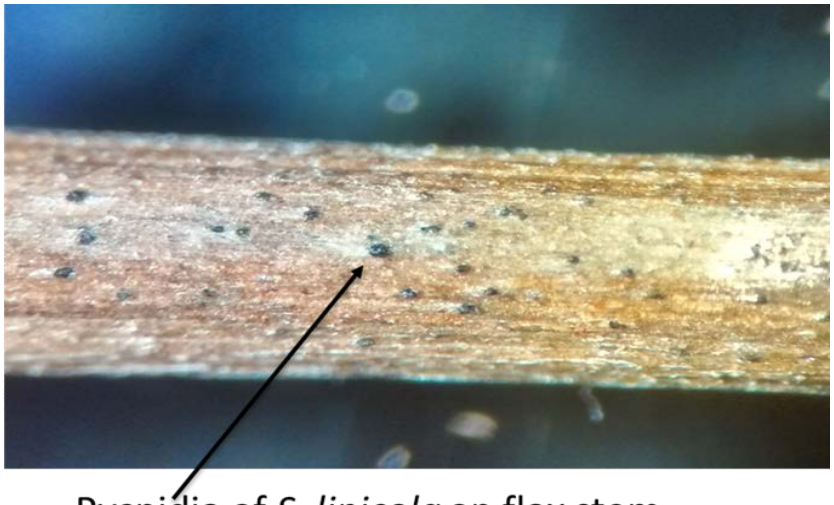
Symptoms

- Disease appear at later stage of crop growth
- Circular and brown lesions on the leaves
- Leaves become dry and wither

Circular brown lesions on leaves

Symptoms

Green and brown alternate band on stem



Pycnidia of *S. linicola* on flax stem

- Brown to black infected bands alternate with green bands on the stem
- Tiny black pycnidia on infected stems
- Stems become weakened, break readily

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Objectives

- To study the effect of different fungicides on disease and seed yield of flax
- To determine the best fungicide application timing

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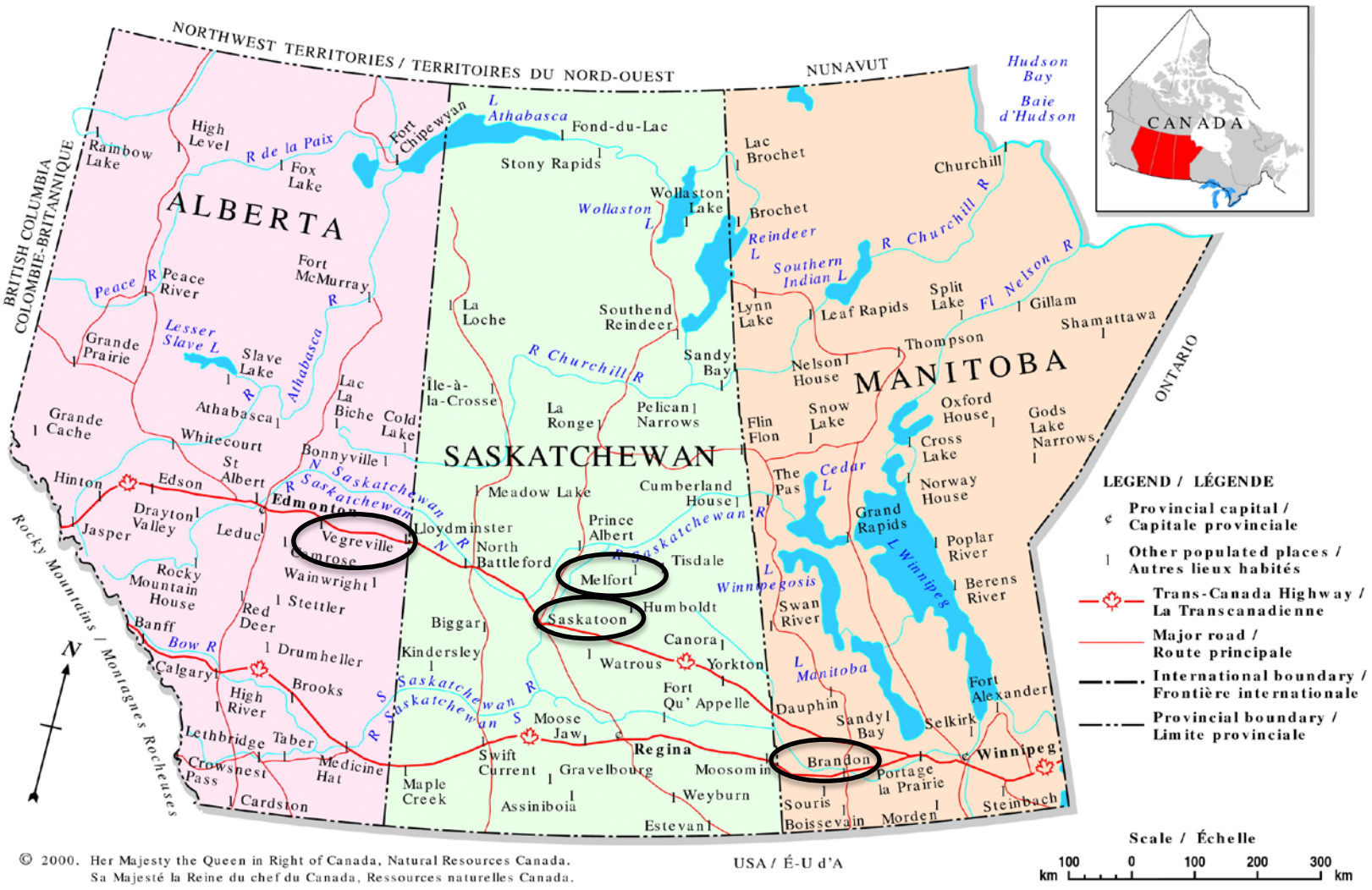
Experiment locations



Materials and methods

- Flax cultivar: CDC Bethune
- Seeding rate: 60 kg ha^{-1}

  (1000 seeds m^{-2})
- Seeding date: Last week of May
- Source of inoculum: Infected flax straw of previous year

http://www.inspection.gc.ca

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Materials and methods

- Fungicides:
  - Headline® EC (pyraclostrobin)
  - Xemium® (fluxapyroxad)
  - Priaxor® (pyraclostrobin + fluxapyroxad)

- Application Rate:
  - Pyra (100 g ai/ha = 400 mL/ha)
  - Fluxa (50 g ai/ha = 170 mL/ha)
  - Pyra + Fluxa (150 g ai/ha)

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Materials and methods

- Application timing: Early flowering (BBCH-scale 61)
  Mid-flowering (BBCH-scale 65)
  Both
- Experimental design: RCBD with 4 reps

Flowering stage of flax

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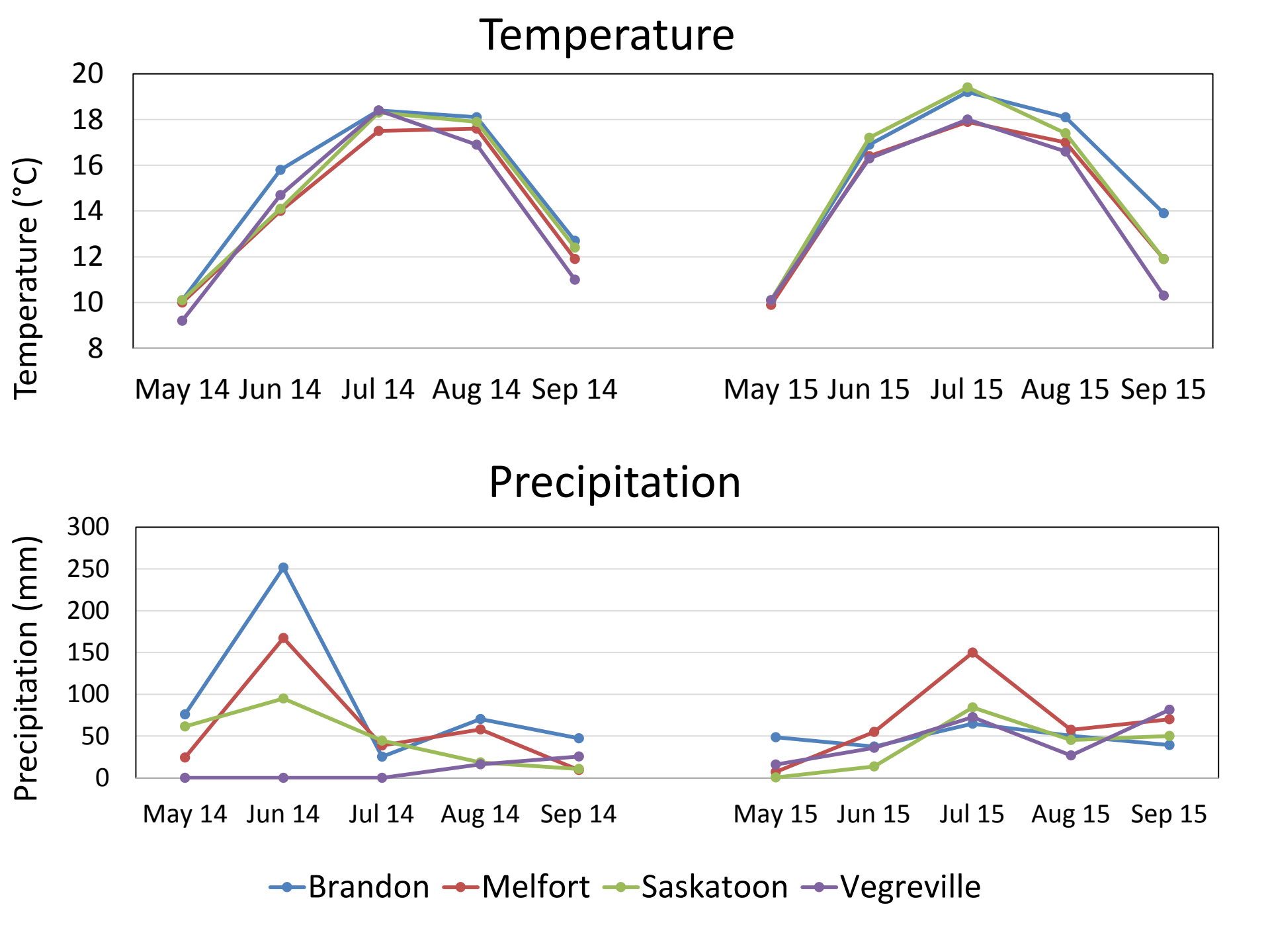
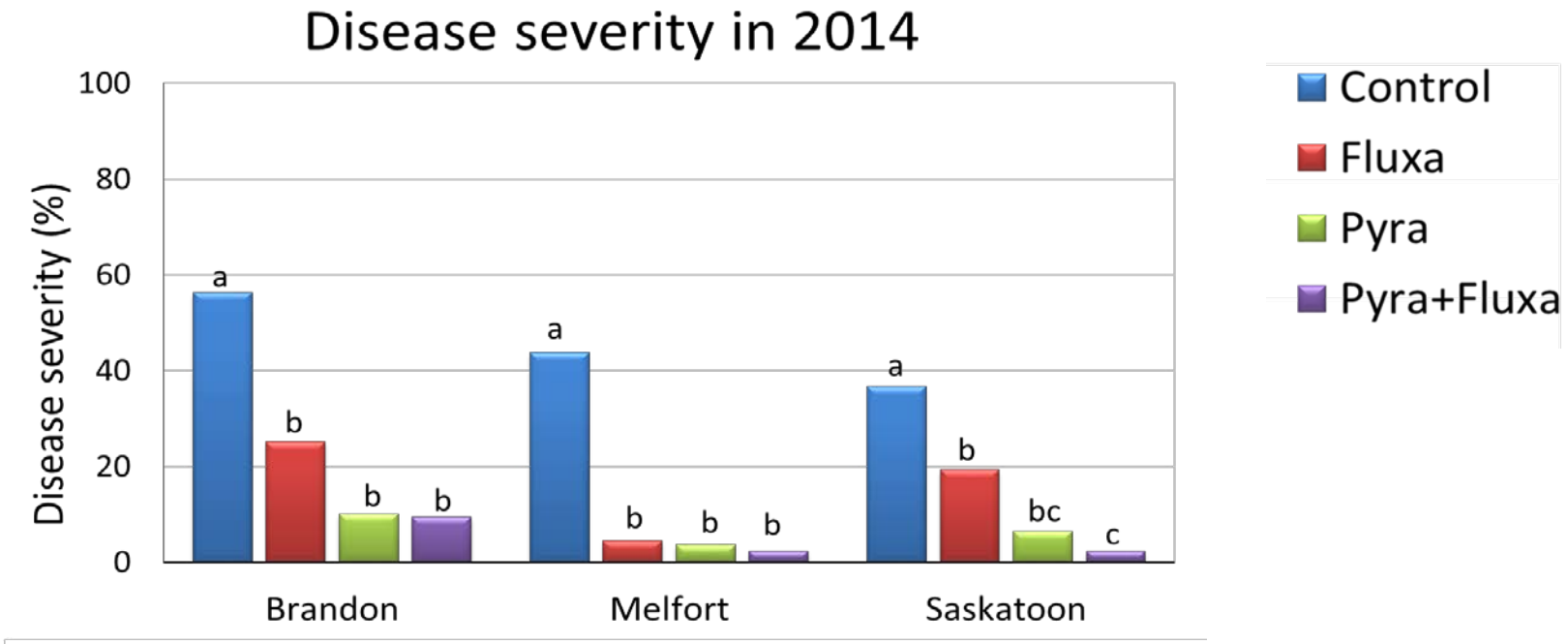
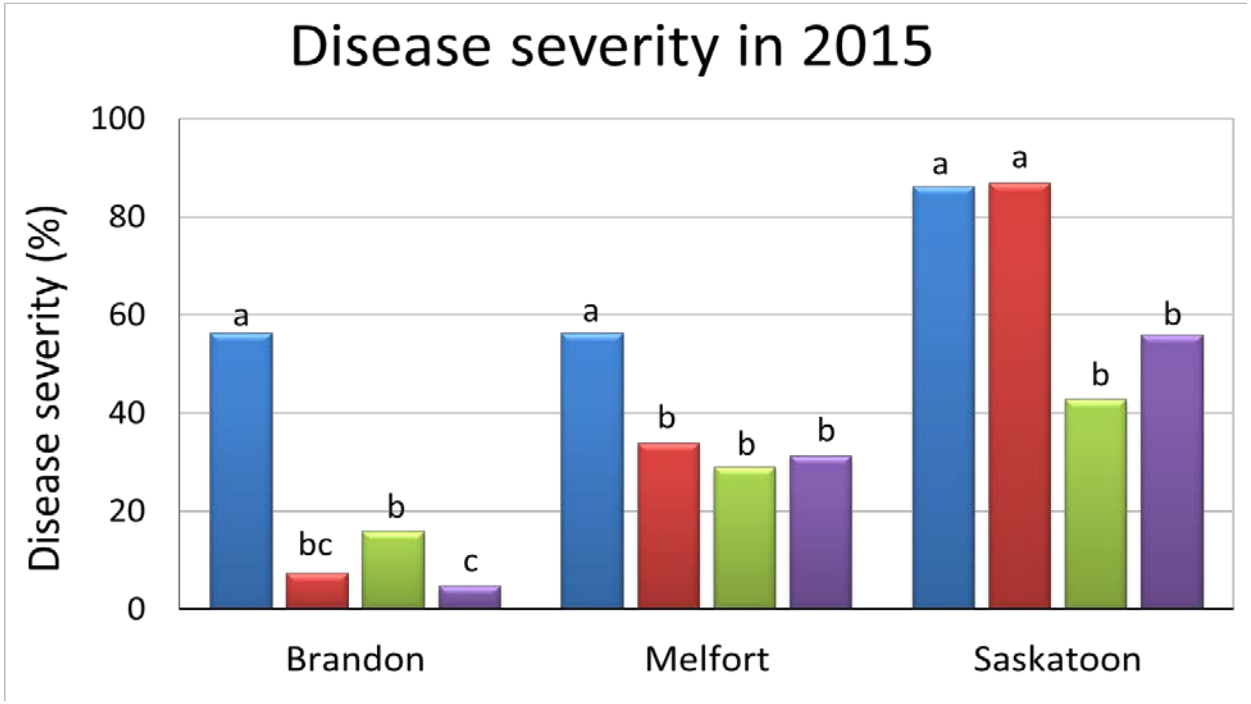
Materials and methods

- Disease assessment: Horsfall-Barratt scale

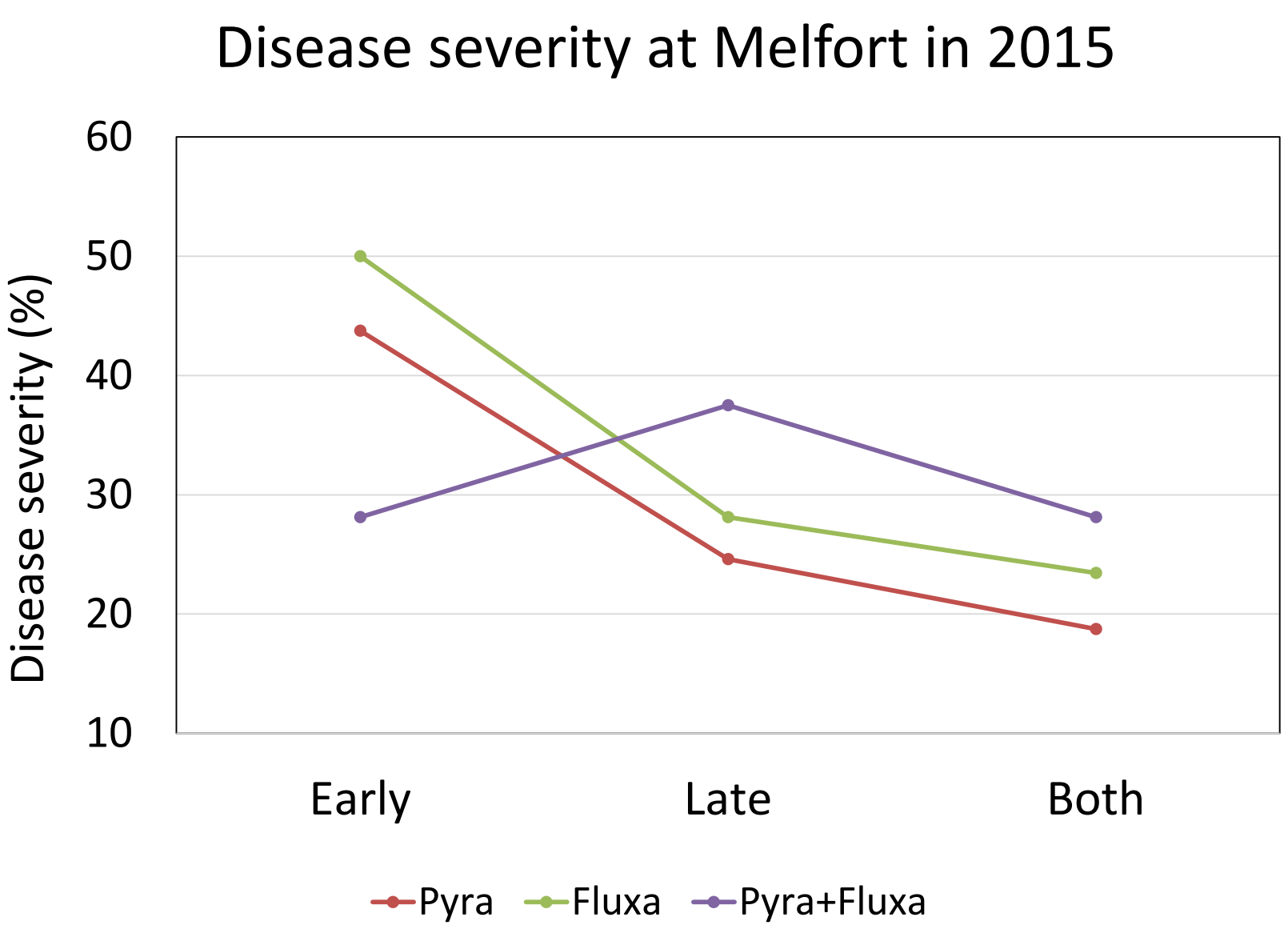
Grade	% Diseased	% Healthy	Grade formula (%)
0	0	100	1.17
1	0–3	97-100	2.34
2	3–6	94-97	4.68
3	6–12	88-94	9.37
4	12-25	75-88	18.75
5	25-50	50-75	37.5
6	50-75	25-50	62.5
7	75-88	12-25	81.25
8	88-94	6–12	90.63
9	94-97	3–6	95.31
10	97-100	0–3	97.66
11	100	0	98.62

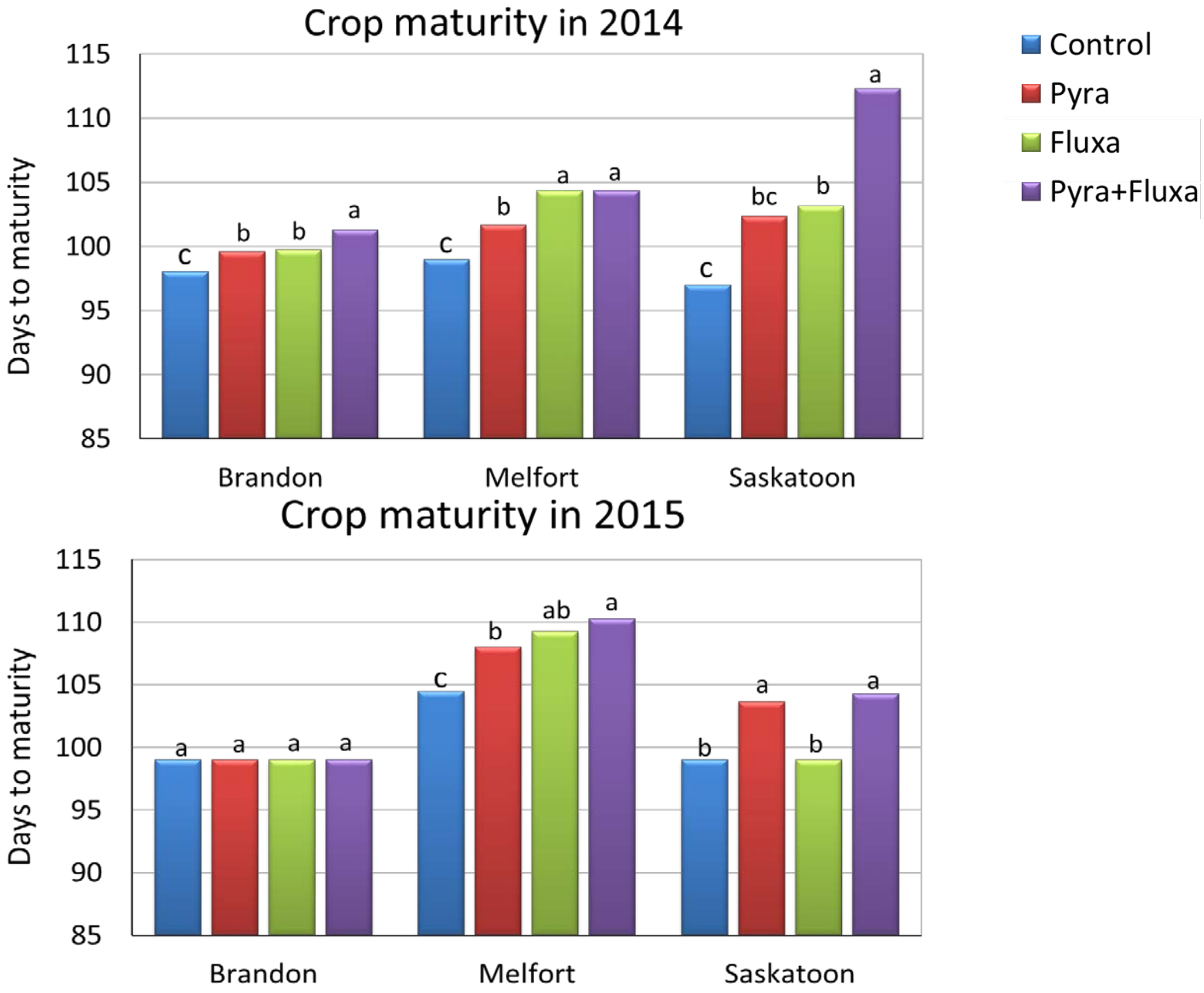

Temperature
Temperature (°C)
20
18
16
14
12
10
8
May 14
Jun 14
Jul 14
Aug 14
Sep 14
May 15
Jun 15
Jul 15
Aug 15
Sep 15
Precipitation
Precipitation (mm)
300
250
200
150
100
50
0
May 14
Jun 14
Jul 14
Aug 14
Sep 14
May 15
Jun 15
Jul 15
Aug 15
Sep 15
Brandon
Melfort
Saskatoon
Vegreville





Different letters among columns of each location are significantly different, $P < 0.05$


Disease severity at Melfort in 2015
Disease severity (%)
60
50
40
30
20
10
Early
Late
Both
Pyra
Fluxa
Pyra+Fluxa



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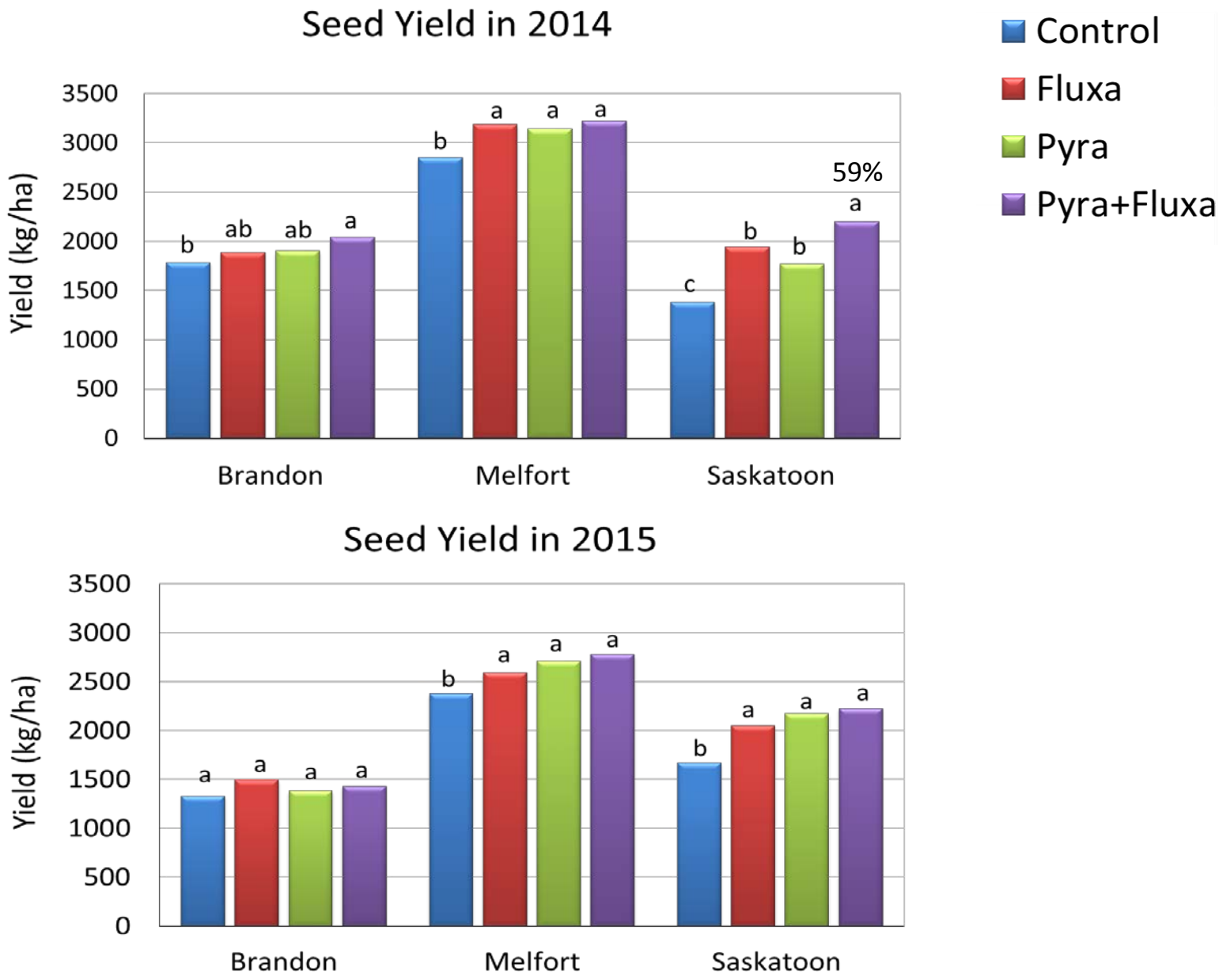

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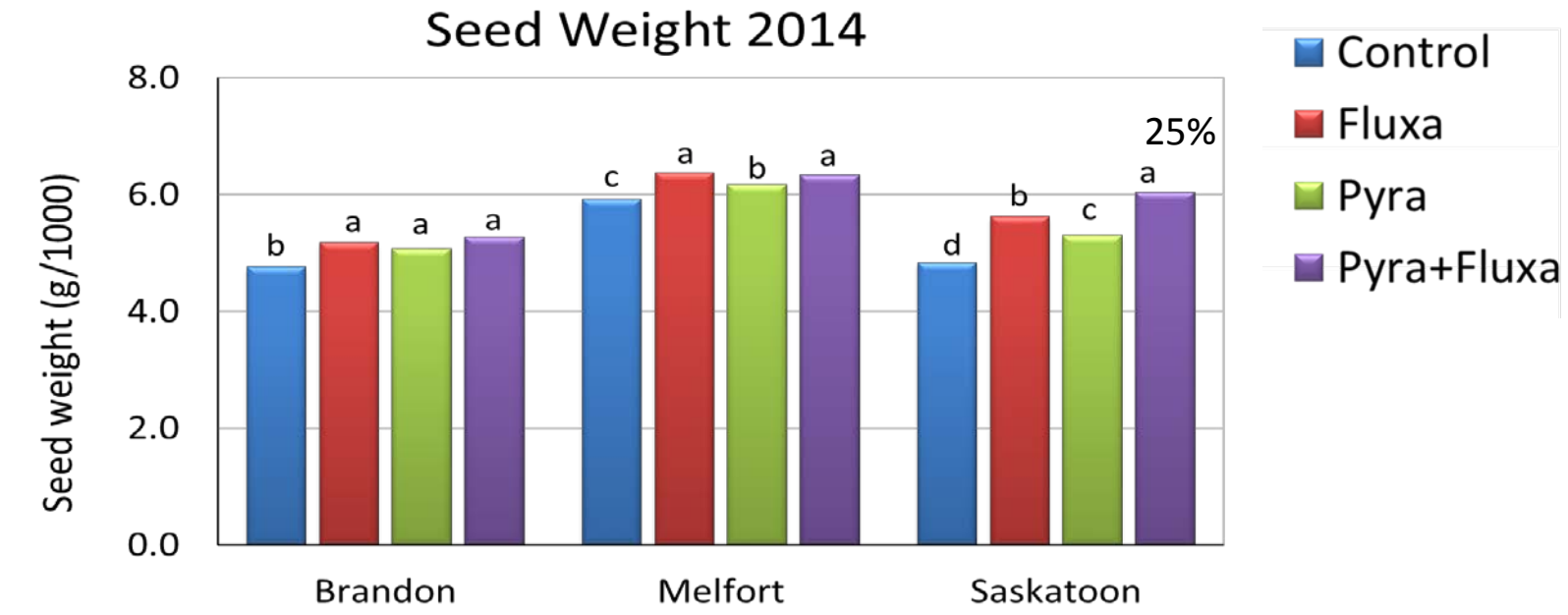

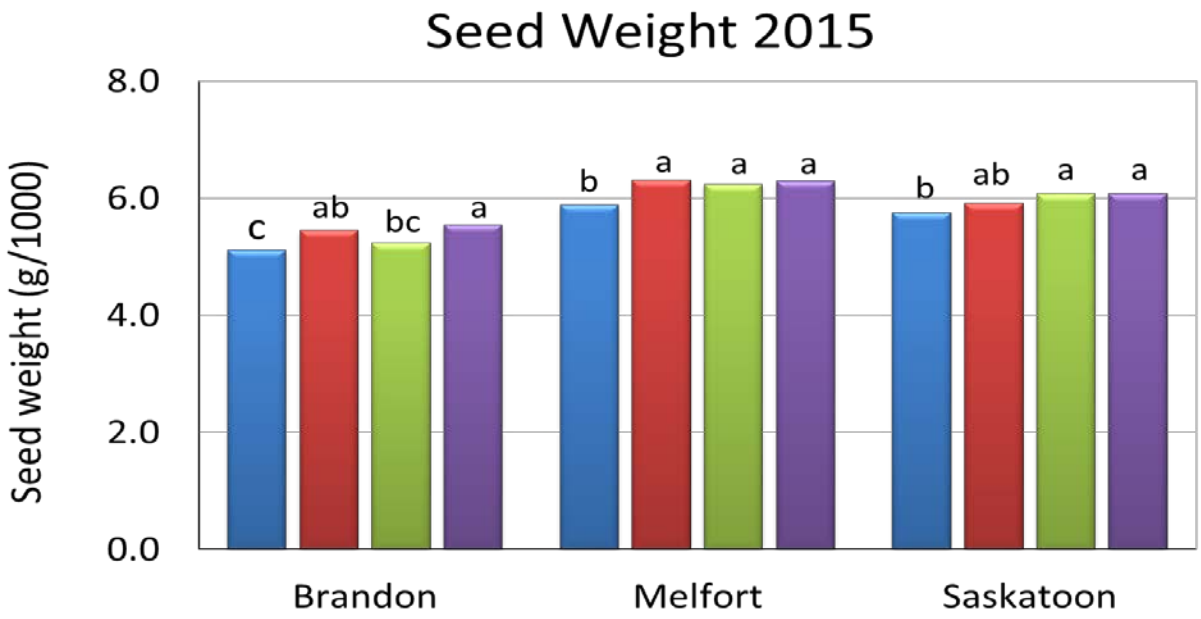

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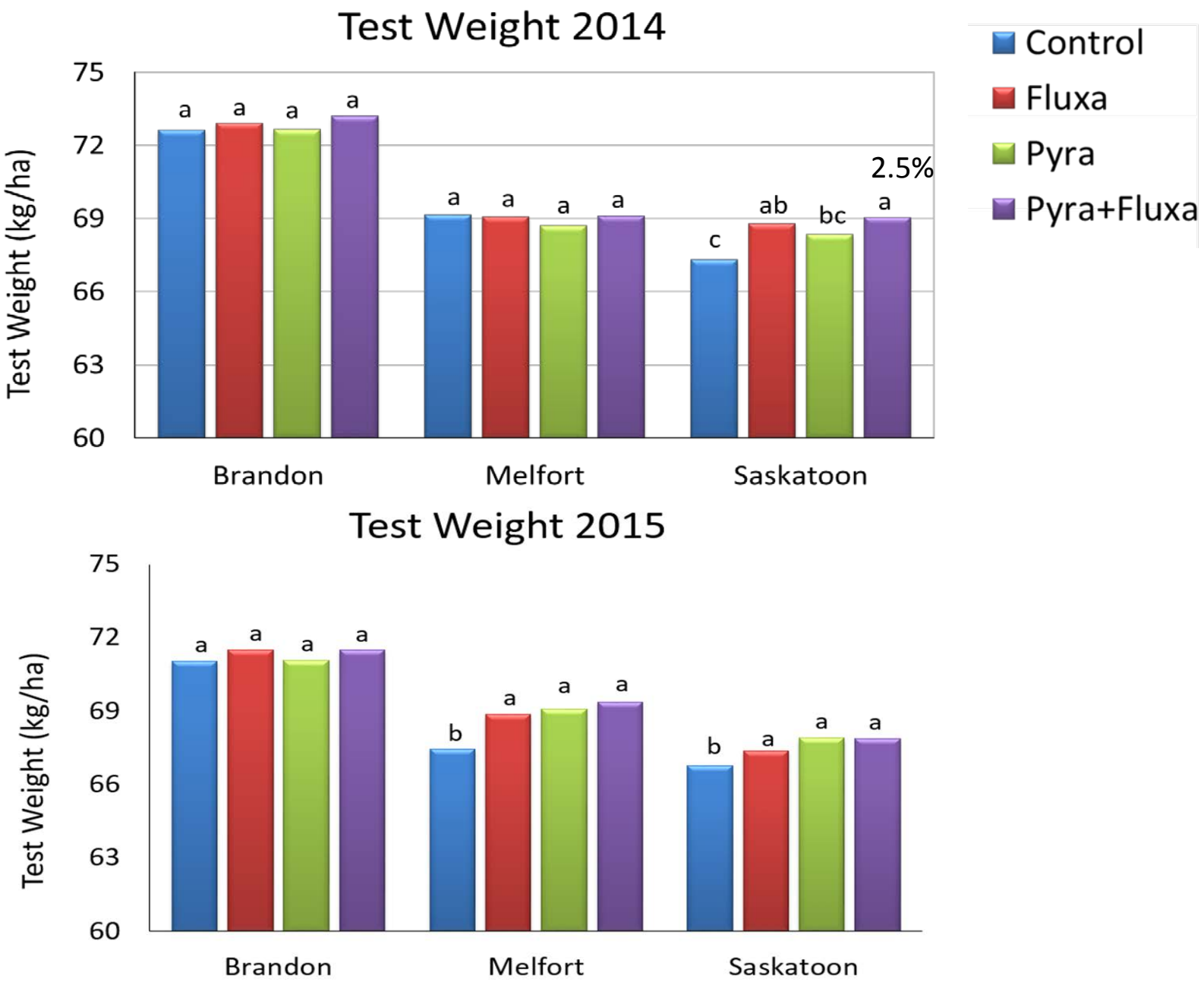

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Summary

- Fungicide application decreased disease severity and increased seed yield over control
- Headline® (pyra) & Priaxor® (pyra + fluxa) were more effective than Xemium® (fluxa)
- Timing of fungicide application had no effect on disease and seed yield

University of Saskatchewan

Thanks

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Growing Forward 2
A federal-provincial-territorial initiative

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QUESTIONS???